

Samina Tanwir

PhD Plant Physiology And Molecular Biology

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Highly ambitious about science and research with 13 + years of professional teaching experience. Extensive background in research and funds acquisition. Expertise in independently conducting/supervising all sorts of research projects related to Plant Science Research. Equipped with strong problem-solving abilities, willingness to learn, and excellent communication skills.



Personal Information

- Age: 38
- Date of Birth: 01-01-1986
- Passport Number: BG7797793
- National ID Number: 33100-4184779-4
- Gender: Female
- Marital Status: Married to Jam Nazeer AHMAD
- Address: 40-Lalazar, University of Agriculture Faisalabad



Professional Experience

ASSOCIATE PROFESSOR Tenured, Department of Botany , University of Agriculture Faisalabad

31-08-2019 to date

ASSITANT PROFESSOR on Tenure Track System, Department of Botany , University of Agriculture Faisalabad

15-08-2012 to 30-08-2019

LECTURER, Department of Botany, University of Agriculture Faisalabad

25-08-2011 to 14-08-2012



Academic and Research Accomplishments

- Attained A+ grades (1st Division) throughout my academic career
- Graduated with 4.0 CGPA and first Position in the University
- Earned a PhD with distinction being one of the youngest to receive a PhD degree at the age of 25
- Supervised over 200 postgraduate students (Masters/PhD) as a major supervisor
- Published 55 high impact factor research publications and 5 book chapters
- Completed 6 Research Projects with a research grant funding worth 65 Million rupees (800,000 USD)
- Won two International research grants, One from the "International Foundation for Science" (as a PI) and one from PAK-NORWAY Institutional Cooperation Program (as a Co PI)
- Established and worked as a Coordinator/HOD of Botany Department's Post Graduate Program at PARS (Postgraduate Agricultural Research Station)
- Invited to speak and present my research work at several International Conferences

Courses Taught

- Bot-101, Botany-I, Undergraduate, 4(3-1)
- Bot-102, Botany-II, Undergraduate, 4(3-1)
- Bot-201, Botany-III, Undergraduate, 4(3-1)
- Bio-301, Essentials of Biology, Undergraduate, 3(2-1)
- Bot-301, Diversity of Plants, Undergraduate, 4(3-1)
- Bot-302, Systematics, Anatomy and Embryology, Undergraduate, 4(3-1)
- Bot-502, Advance Botany, Undergraduate, 4(3-1)
- Bio-501, Population Biology, Undergraduate, 3(2-1)
- Bot-506, Mycology and Plant Pathology, Undergraduate, 3(2-1)
- Bot-508, Plant Anatomy, Undergraduate, 3(2-1)
- Bot-509, Environmental Biology, Undergraduate, 3(2-1)
- Bot-603, Plant Ecology, Post-Graduate, 4(3-1)
- Bot-605, Cell Biology, Post-Graduate, 4(3-1)
- Bot-607, Advanced Plant Metabolism, Post-Graduate, 4(3-1)
- Bot-610, Advance Botanical Techniques, Post-Graduate, 3(1-2)
- Bot-611, Paleobotany and Evolution, Post-Graduate, 2(1-1)
- Bot-606, Plant Physiology, Post-Graduate, 3(2-1)
- Bot-601, Phycology and Plant Morphology, Post-Graduate, 4(3-1)
- Bot-604, Plant Taxonomy, Post-Graduate, 4(3-1)
- Bot-616, Plant Embryology Undergraduate, 3(2-1)
- Bot-706, Plant Nanobiology, Post-Graduate, 3(2-1)
- Bot-708, Plant Functional Histology, Post-Graduate, 3(3-0)
- Bot-705, Plant Developmental Biology, Post-Graduate, 3(3-0)
- Bot-709, Plant Water Relations, Post-Graduate, 3(2-1)
- Bot-704, Radiation and Molecular Biology, Post-Graduate, 4(3-1)

Research Interests

- Insect-plant interactions
- Plant defense response mechanisms against biotic and abiotic stresses
- Medicinal Plant extractions and drug formulation against cancer and dengue fever
- QTL Mapping and Genomic studies in wheat for drought and pest tolerance
- Phytoplasma diseases in Plants

Research Grants

As a Principal Investigator

1. "Management of Drought Stress in Wheat (*Triticum aestivum* L.) by Ascorbic Acid" Funded by HEC (**0.5 Million Rupees**)
2. "Improving drought tolerance of wheat by mapping Quantitative Trait Loci of some important physiological traits" Funded by: the International Foundation for Science (**1.2 Million Rupees**)
3. "Studying the molecular defense response in wheat (*Triticum aestivum* L.) For sustainable insect pest management" Funded by the HEC-NRPU (**6.5 million Rupees**)

As a Co-Principal Investigator

4. "Studying Plant Defense responses in oilseed rape (*Brassica napus*) for sustainable pest management" Funded by the Pakistan-Norway Institutional Cooperation Programme (**50 Million Rupees**)
5. "Comparative analysis of defense gene expression and their effect upon resistance induced by the application of plant activators against chewing and sucking insect pest in tomato" Funded by: HEC Pakistan (**0.5 Million Rupees**)
6. "Molecular Identification, Characterization and Management of Phytoplasma's Insect vectors and associated diseases of Punjab, Pakistan" Funded by: HEC NRPU Program Pakistan (**11.42 Million Rupees**)
7. " Evaluation and management of indigenous date palm genetic resources for economic traits, Fusarium wilt and red palm weevil" Funded by PARB "Punjab Agricultural Research Board" (**38.66 Million Rupees**)-
8. Study on Genetic variation, resistance gene expression and virus based control of fall armyworm, *Spodoptera frugiperda* in Pakistan" Funded by HEC-NRPU (**5.9 Million Rupees**) - in progress

Oral Presentations at Conferences

1. "Cytotoxicity against A549 Human Lung Cancer Cell Line via the Mitochondrial Membrane Potential and Nuclear Condensation effects of *Nepeta paulesenii* Briq., a Perennial Herb" in the **11th EMS Conference held at Makkah, Saudi Arabia** from 7th to 17th January, 2024.
2. "DNA barcoding, Phylogenetic Analysis and disease transmission study in *Medicago sativa* (16Sr-II-D) infected by Phytoplasma bacteria" in the International Conference of Food and Applied Sciences (Dir-Kumrat) from 3rd to 5th August, 2023.
3. "Efficacy of Botanical Encapsulated Zinc Nano-Particles for the Management of Bird Cherry Oat Aphid, *Rhopalosiphum padi* L. (Hemiptera: Aphididae)" in the International Conference on "Interdisciplinary Research Innovations" from 26th to 28th October, 2022 at the University of Agriculture Faisalabad
4. "Morphological and Physico-chemical changes induced by phytoplasma infection in *Brassica napus* Plant" at the 1st International Conference on Revamped Scientific Outlook of 21st Century held at Rawalpindi Women University (12th October, 2022).
5. "Metabolic and physiological changes induced in *Sesamum indicum* infected by phytoplasmas at the **4th IPWG meeting held in Valencia Spain** (8-12th September, 2019)
6. Synergistic effect of Methyl Jasmonate and salicylic acid on Cry1ac gene expression in Bt cotton (*Gossypium hirsutum* L.) for sustainable management of *Pectinophora gossypiella* at the "1st International Conference on Biotechnology (ICB): Challenges and Opportunities in Pakistan held at the Lahore Garrison University (11-12th October, 2017).
7. "Application of phytohormone based induced resistance and biological control agents

reduces the population of aphids on Brassica napusL" at the **XXV International Congress of Entomology (ICE 2016) held in Florida USA** (25-30th Sep, 2016).

8. "Differential regulation of Developmental genes expression and Methylation status of phytoplasma and insect infested Brassica napus L. Accepted for oral presentation at the **"CSA-CSHS Joint Conference" held in Montreal, Canada** (24-26th July, 2016).

9. New Reports of phytoplasma occurrence in Pakistan. In **"3rdIPWG (International Phytoplasma Working Group) Meeting" held at Mauritius** (14-17th January, 2015).

10. QTL Mapping for drought resistance in wheat. In "International Conference on Biotechnology Prospects and Challenges in Agriculture, Industry, Health and Environment", held at NIBGE, Faisalabad (22-26 April, 2013).

Selected Publications

- Benzothiadiazole maintains redox balance and promotes defense against *Sitobion avenae* (F.) in wheat by fine-tuning the antioxidant system, secondary metabolism, and osmolyte accumulation. **Turkish Journal of Botany** (2025). 49:2.
<https://doi.org/10.55730/1300-008X.2844>
- Jasmonic acid and salicylic acid improved resistance against *Frugiperda Spodoptera* infestation in maize by modulating growth and regulating redox homeostasis. **Scientific Reports** (2024), 14: 16823
- Cytotoxicity against A549 Human Lung Cancer Cell Line via the Mitochondrial Membrane Potential and Nuclear Condensation effects of *Nepeta paulsenii* Briq., a Perennial Herb. **Molecules** (2023), 28, 2806-2812
<https://doi.org/10.3390/molecules>,
- *Nepeta paulsenii* Briq. inhibits hepatic toxicity in albino rats: Phytochemical analysis and chemical profiling, **Journal of King Saud University-Science** (2023)
<https://doi.org/10.1016/j.jksus.2023.102542>, 4
- First report of DNA barcoding, phylogenetic analysis and transmission study of *Medicago sativa* phytoplasma (16Sr-II-D) and associated insect vectors in Pakistan, **Australasian Plant Pathology**, 52, 293–302, <https://doi.org/10.1007/s13313-023-00919-7>, 2023
- Effect of integrated nutrient management practices on physiological, morphological and yield parameters of chilli (*capsicum annum* L.), **Pakistan Journal of Botany** (2022). 54, (6)
- Exploring the effect of Jasmonic acid for aphids control for improving the yield of *Triticum aestivum* varieties, Peer J., <https://doi.org/10.7717/peerj.14018>, 2022
- Study of genetic modifications of flower development and methylation status in phytoplasma infected Brassica (*Brassica rapa* L.), **Molecular Biology Reports**, 49, 11359–11369, 2022
- Taurine regulated ROS metabolism, osmotic adjustment and nutrient uptake to lessen the effects of alkaline stress on *Trifolium alexandrinum* L., **South African Journal of Botany**, 148, 482-498, 2022
- Characterization of *Ocimum basilicum* synthesized silver nanoparticles and its relative toxicity to some insecticides against tobacco cutworm, *Spodoptera litura* Fab. (Lepidoptera; Noctuidae), **Ecotoxicology and Environmental safety** (2021). 218, 112278, <https://doi.org/10.1016/j.ecoenv.2021.112278>
- First report of 16SrII-D phytoplasma and associated insect vectors infecting multi-flower inbred lines of Sunflower (*Helianthus annuus* L.) in Faisalabad, Pakistan, **Pakistan Journal of Agriculture Sciences** (2021). 58, (3),
- The Imaging of Guard Cells of thioglucosidase (tgg) Mutants of Arabidopsis Further Links Plant Chemical Defence Systems with Physical Defence Barriers, **Cells** (2021). 10, 227,

<https://doi.org/10.3390/cells10020227>

- Effect of Natural High temperature and Flooding conditions on Cry1Ac gene expression in different transgenic Bt cotton (*Gossypium hirsutum* L.) cultivars, **Pakistan Journal of Botany** (2021). 53, (1)
- Interference with developmental and pathogenesis related genes expression in 16Sr-IX associated phytoplasma infected *Brassica campestris*, **Acta Horticulturae** (2020). 1297, 481-492, 10.17660/ActaHortic.2020.1297.63
- Evaluation of morphological and physiological changes in phytoplasma infected *Brassica napus*, **Journal of Animal and Plant Sciences** (2020) 30, 1596-1603, 2020
- Gene mining for proline based signaling proteins in cell wall of *Arabidopsis thaliana*, *Frontiers in Plant Science*, 10.3389/fpls.2017.00233, 2017
- *Arabidopsis* myrosinases link the glucosinolate-myrosinase system and the cuticle. 2016. **Scientific reports/nature**, Article: 38990. DOI: 10.1038/srep38990.
- Molecular and biologic features of sarsoon phyllody phytoplasma affiliated to the new subgroup 16SrIX-H in Punjab Province, Pakistan. **European Journal of Plant Pathology** (2017). DOI 10.1007/s10658-017-1170-4
- Phytoremediation Potential of Hemp (*Cannabis sativa* L.): Identification and Characterization of Heavy Metals Responsive Genes. **CLEAN-Soil, Air, Water** (2016) 44(2): 195-201. DOI: 10.1002/clen.201500117
- Genetic Mapping of potential QTLs associated with drought tolerance in wheat. **Journal of Animal and Plant Sciences** (2015) 25(3).
- Effect of ascorbic acid application on physiology of wheat under drought stress. **Pakistan Journal of Agricultural Sciences** (2015). 52(1): 209-217.
- Tagging genes for velvet hairiness in Upland cotton. **Journal of Animal and Plant Sciences** (2013). 23(6):1666-1670.
- Exogenous application of ascorbic acid stimulates growth and net photosynthesis of wheat (*Triticum aestivum* L.) under drought stress. **Soil and Environment** (2012). 31(1): 72-77.
- Modulation in growth, some physiological attributes and fibre quality in Upland Cotton (*Gossypium hirsutum* L.) due to frego bract mutation. **Pakistan Journal of Botany** (2009). 41(5):2157-2166.

Countries visited

- Uk,
- USA,
- Canada
- France,
- Ireland,
- Norway
- Egypt,
- Saudia Arabia,
- UAE
- Mauritius

Awards/Honours

Gold Medal

Graduated in Botany with a Gold Medal, awarded for first position in the university

Nomination for the Presidential Award

Nominated by the University for the Presidential Award, Izaz-e-Sabqat.

PhD Fellowship Award

Qualified International GRE (subject) test in Biology and awarded a PhD fellowship

Award of Honorarium

Completed PhD within 6 semesters and was awarded an honorarium and letter of appreciation by the University Chancellor

Travel Grant

My paper was selected for oral presentation at the 3rd IPWG (International Phytoplasmologist Working Group) Meeting" held at Mauritius (14-17th January, 2015). I competed and won an international travel grant from PARB (Punjab Agricultural Research Board)

Certificate by the Governor Punjab

I Won a project through the HEC-NRPU competitive research grant program and was awarded a certificate by the Governor Punjab in an award distribution ceremony held on Friday, April 28, 2017 at the Awari Hotel Lahore

Qualifications/Degrees

Metric (Science): Faisalabad Board, 714/850 marks (1st Division) in 2001

FSc (Pre Medical): Faisalabad Board, 854/1100 marks (1st Division) in 2003

BSc (Botany, Zoology and Chemistry): University of the Punjab 480/800 (1st Division) in 2005

MSc (Botany): University of Agriculture Faisalabad, 4.0 CGPA in 2007

PhD (Botany): University of Agriculture Faisalabad in 2011

Administrative experiences

- Member Faculty Board
- Secretary Board of Studies
- Tutor
- Postgraduate Program Coordinator
- Student advisor
- Class in charge
- Superintendent/Deputy superintendent exam
- External examiner for thesis evaluation of postgraduate students from other universities
- Hostel Superintendent
- Superintendent of the Working Women Hostel
- Female Hall Warden
- Team leader of Refresher Course organized for laboratory and field staff of the university
- Organizing team member of several workshops/conferences and extra-curricular activities
- Editor PARS newsletter
- Convenor of Synopsis Scrutiny Committee
- Reviewer/editor for various research journals

Professional Memberships

- Member Pakistan Botanical society
- Member International Horticultural Society